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Autonomous boat for underwater surveillance (Article)

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Abstract View references (14)

Generally, an autonomous boat with vision ability faces difficulties in navigation and data processing. In this work, implementation on image processing in underwater environment is implemented using autonomous for surveillance purposes. In this endeavor, the focus will be on analyzing the use of single vision cameras in providing data for research on environmental front underwater and also detecting depth and obstacles for better navigation. The system is able to detect solid objects in underwater and it can provide different information of marine environment using correct algorithm and technique. The result is accurate enough to detect obstacles or objects above and beneath the water taking into account the diffraction of light needed for perfect vision. In this research, OpenCV library is used for digital image processing and color feature analysis rather than MATLAB due to the complexity for real time process. The design structure is mainly based on Pontoon style because it is more stable and reliable especially on the river wave condition. Moreover, additional sensors and actuators are implemented in this project to monitor underwater information for navigation purposes. © BEIESP.

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Alex Raj, S.M. , Supriya, M.H.  
(2016) IIOAB Journal
- Underwater image/video enhancement using wavelet based color correction (WBCC) method  
Singh, G. , Jaggi, N. , Vasamsetti, S.  
(2015) 2015 IEEE Underwater Technology, UT 2015

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- ☐ 1 Gonzalez, R., Woods, R.  
 (2002) Digital Image Processing. Cited 30101 times.

---

- ☐ 2 Kumar, C.J., Prabhaka, P.  
 An Image Based Technique for Enhancement of Underwater Images  
 (2011) International J. Mach. Intell, 3 (4), pp. 217-224. Cited 30 times.

---

- ☐ 3 Iqbal, K., Salam, R.A., Osman, A., Talib, A.Z.  
 Underwater Image Enhancement Using an Integrated Colour Model  
 (2007) Int. J. Comput. Sci, 34 (2), pp. 239-244. Cited 145 times.

---

- ☐ 4 Umar, K., Suzuki, H.D., Chang, H.  
 We are Intech Open, the world ' s leading publisher of Open Access books Built by scientists, for scientists  
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 Intech Open, 2, p. 64. Cited 8 times.  
 Sciences Publication Retrieval Number: F02400376S19/19 ©BEIESP

---

- ☐ 5 Sulaiman, R., Prabuwno, A.S.  
 (2008) 10. Intelligent Visual Inspection of Bottling Production Line through Neural Network, 68 (4), pp. 57-63.

---

- ☐ 6 Pram, K., William, W., Report, P.  
 "Histogram-Based Color Image Retrieval  
 (2008) ," Image (Rochester, N.Y.), pp. 1-21. Cited 3 times.

---

- ☐ 7 Kamenetzky, J., Rangwala, N., Glenn, J., Maloney, P.R., Conley, A.  
 (2014) A Survey of the Molecular Ism Properties of Nearby Galaxies Using the Herschel FTS, 795 (2).

---

- ☐ 8 Wang, H., Kalam, Q., Tao, J.  
 Resistive switching properties and physical mechanism of cobalt ferrite thin films  
 (2014) Appl. Phys. Lett, 104 (14).

---

- ☐ 9 Bazeille, S., Lion, D., Wusa, K.T., Qarti, W.  
 (2010) Automatic Underwater Image Pre-Processing to Cite This Version : HAL Id : Hal-00504893

---

- ☐ 10 Wuthishuwong, C., Silawatchananai, C., Parnichkun, M.  
 Navigation of an intelligent vehicle by using stand-alone GPS, compass and laser range finder  
  
 (2008) 2008 IEEE International Conference on Robotics and Biomimetics, ROBIO 2008, art. no. 4913330, pp. 2121-2126. Cited 15 times.

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- 
- ☐ 11 Hamid, M.H.A., Adom, A.H., Rahim, N.A., Rahiman, M.H.F.

Navigation of mobile robot using Global Positioning System (GPS) and obstacle avoidance system with commanded loop daisy chaining application method

(2009) Proceedings of 2009 5th International Colloquium on Signal Processing and Its Applications, CSPA 2009, art. no. 5069211, pp. 176-181. Cited 9 times.

ISBN: 978-142444150-1

doi: 10.1109/CSPA.2009.5069211

[View at Publisher](#)

- 
- ☐ 12 Yoon, B.-J., Park, M.-W., Kim, J.-H.

UGV(Unmanned Ground Vehicle) navigation method using GPS and compass

(2006) 2006 SICE-ICASE International Joint Conference, art. no. 4108391, pp. 3621-3625. Cited 15 times.

ISBN: 8995003855; 978-899500385-5

doi: 10.1109/SICE.2006.314891

[View at Publisher](#)

- 
- ☐ 13 Prabowo, A.R., Power, W.S., Sami, K., Urard, T.

(2018) Analysis of Structural Crashworthiness on a Non-Ice Class Tanker during Stranding Accounting for the Sailing Routes, pp. 645-654.

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- 
- ☐ 14 Shakir, M., Izhar-Ul-Haq, Khan, M.A., Malik, S.A., Khan, S.A.

Alternate energy resources for Pakistan: Sustainable solutions for fulfilling energy requirements


(2014) World Applied Sciences Journal, 31 (5), pp. 718-723. Cited 3 times.

<http://idosi.org/wasj/wasj31%285%2914/6.pdf>

doi: 10.5829/idosi.wasj.2014.31.05.1526

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